Acta Zootaxonomica Sinica, 35 (4): 871–875 (Oct, 2010) ISSN 1000-0739
动物分类学报

中国拟钉螺属两新种记述 (中腹足目, 盖口螺科)

程由注[1] 吴小平[2*] 李莉莎[1]

1. 福建省疾病预防控制中心 福州 350001, E-mail: chengfz0591@163.com
2. 南昌大学生命科学学院 南昌 330031

摘 要 报道了采自福建省建瓯市和华安县的拟钉螺属 *Triula* 2新种, 分别命名为建瓯拟钉螺 *T. jianouensis* sp. nov. 和华安拟钉螺 *T. huaanensis* sp. nov., 并与近似种福建拟钉螺比较。上述两种螺类, 均为斯氏并殖吸虫第1中间宿主。

关键词 盖口螺科, 拟钉螺属, 新种.
中图分类号 Q959.21

拟钉螺属 *Triula* Benson, 1843隶属于盖口螺科 Pomatiopsidae, 拟钉螺亚科 Triculinae, 分布于印度、缅甸、泰国、菲律宾、日本及中国, 为东洋界种类。已报告31种, 其中印度2种 (Benson, 1843; Prashad, 1921), 缅甸5种 (Annandale, 1925), 泰国2种 (Davis, 1968), 菲律宾4种 (Quadrass and Moellendorff, 1895) 和日本1种 (Davis, 1971)。我国已记载17种 (Gredler, 1885, 1897, 1892; Heude, 1890; Annandale, 1924; Yen, 1939; 孙振中, 1959; 刘月英等, 1983, 1987; 康在彬, 1983, 1984, 1990; 郭源华等, 1985; Davis等, 1986)。福建、广东、广西、湖北、湖南、江西、浙江、云南、四川、贵州、河南、陕西、山西、甘肃等省均有分布, 其中有些种类已证明是斯氏并殖吸虫的第1中间宿主 (刘月英等, 1984)。作者于2006年11月和2007年3月分别在福建北部的建瓯市与福建西南部的华安县进行肺吸虫病疫源地调查, 获得一批螺类标本。经鉴定, 获得拟钉螺属 *Triula* 2新种, 除留模式和副模标本外, 其它作并殖吸虫尾蚴检查。模式标本保存于福建省疾病预防控制中心寄生虫标本室。新种记述如下。测量单位: mm。

1 建瓯拟钉螺, 新种 Triula jianouensis **sp. nov.** (图1, 5, 8, 11~12)

正模: 壳高3.11, 壳宽1.53, 体螺层高1.10, 壳口高1.25, 壳口宽0.90。副模, 50个: 壳高2.88~3.13, 壳宽1.38~1.60, 体螺层高1.00~1.13, 壳口高1.20~1.28, 壳口宽0.80~0.93。

1.1 形态描述

贝壳微小, 呈宽卵圆锥形, 壳质略厚, 不透明。5个螺层, 各螺层增长较快, 呈阶梯式; 成螺第4, 5螺层常缺失; 壳高为体螺层高度的2.78倍。壳顶圆钝, 乳头状。贝壳光滑, 淡青黄色。体螺层稍膨大, 壳面具有细微的生长线, 缝合线浅。壳口缘完整, 但不在同一平面上, 上缘与内外唇相交处约成方形窄角, 外缘略向螺腹面扩张, 内唇嵴明显高出, 与体螺层间有一沟状间隙。脐孔呈沟隙状。厣呈长椭圆形, 角质, 薄而透明, 其上有不明显的螺旋形生长线。阴茎呈弯曲长条状 (图5, 8), 前端略呈钩形, 位于颈部背侧。齿舌每一横列有7枚齿, 其中1枚中央齿, 左右各为1枚侧齿, 2枚缘齿。齿式: 2-1-2/2-2• 3-1-3• 11 (14) • 14 (15)。中央齿上缘有5个尖齿, 中央尖齿长; 基部二侧各有2枚大小不一的基底齿。侧齿上缘尖齿7个, 中央尖齿宽大。内缘齿上缘有大小相近的尖齿11~14个。外缘齿上缘尖齿14~15个 (图11~12)。

词源: 依据正模标本采集地命名。

1.2 生境

标本于2006年11月5日采自福建省北部建欧市小桥镇七里坑村, 为丘陵山区, 周围森林茂密。海拔203 m。该种螺栖息地为山垅田灌溉沟源头, 水流缓慢小沟, 水pH值6.0, 沟底为石块、砂石、枯枝和落叶。小螺多附着于石块、枯枝或烂叶片上。

1.3 螺体肺吸虫尾蚴感染情况

解剖建欧拟钉螺886个, 螺体检出斯氏并殖吸虫尾蚴者1个, 感染率为0.11%。

国家自然科学基金 (30460023) 和国家科技部自然资源平台项目 (2005DKA21100) 资助.
* 通讯作者, E-mail: xpwu@ncu.edu.cn
收稿日期: 2010-05-20, 修订日期: 2010-09-09.

2 华安拟钉螺, 新种 Tricula huaanensis **sp. nov.** (图 2~3, 6, 9, 13~14)

正模: 壳高 2.50, 壳宽 1.15, 体螺层高 0.83, 壳口高 1.13, 壳口宽 0.80。副模: 50个。壳高 2.41~2.58, 壳宽 1.05~1.18, 体螺层高 0.78~0.85, 壳口高 1.08~1.15, 壳口宽 0.73~0.80。

2.1 形态描述

贝壳微小, 外形呈宽圆锥形, 壳质较薄, 略透明。5个螺层, 各螺层增长较快, 呈阶梯式排列, 壳顶圆钝。壳高为体螺层高度的 3.12倍。贝壳面光滑, 淡绿色。体螺层膨大, 壳面具微弱的生长线, 缝合线浅。壳口周缘具黑褐色框边, 下缘向外方扩展。内唇低平, 内唇中段紧贴于体螺层上。壳口上缘角上部增厚并呈山峰状隆起, 而与其相连的下方壳缘有一浅凹沟。脐孔裂隙状, 位于轴缘后方。厣长卵圆形, 前端稍窄, 角质, 极薄, 透明, 螺旋形生长线不明显; 厣内侧贴附于足肌上, 致使足不能全部缩入壳内。阴茎呈长条状 (图 6, 9), 末端呈尖钩形弯曲, 位于颈部背侧。齿舌每一横列具 7枚齿, 其中中央齿 1枚, 左右各 1枚侧齿, 2枚缘齿。齿式: 3 (2) -1-2/3 (2) -2• 3 (2) -1-2• 9-10• 11-12。中央齿上缘尖齿 6~7个, 中央 1尖齿粗长; 其基部二侧各有 1簇梳耙状双生型基底齿, 端部尖齿悬殊大于次尖齿。侧齿上缘尖齿 6~7个, 中央尖齿宽大。内缘齿上缘有大小相近尖齿 9~10个, 外缘齿尖齿 11~12个。(图 13~14)。

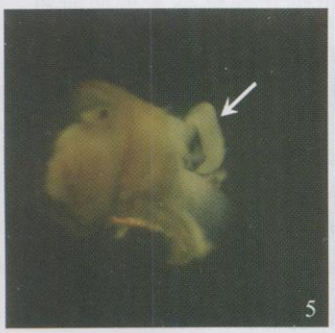
词源: 依据正模标本采集地命名。

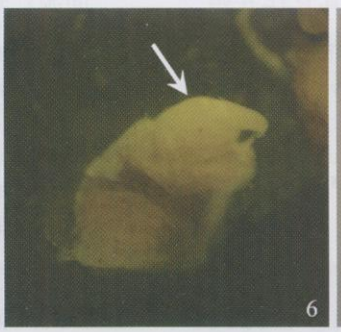
图 1 建瓯拟钉螺, 新种 *T. jianouensis* sp. nov., 腹面观 (Ventral view)

图 2~3 华安拟钉螺, 新种 *T. huaanensis* sp. nov.

2. 腹面观 (ventral view) 3. 侧面观 (lateral view)

图 4 福建拟钉螺 *T. fujianensis*, 腹面观 (Ventral view)





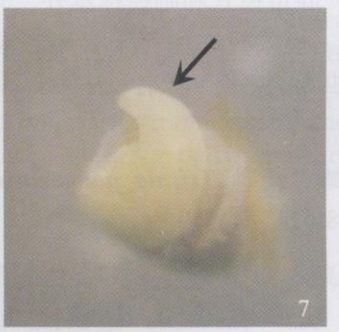


图 5~7 拟钉螺阴茎 (Penis of *Tricula*)

5. 建瓯拟钉螺, 新种 *T. jianouensis* sp. nov. 6. 华安拟钉螺, 新种 *T. huaanensis* sp. nov. 7. 福建拟钉螺 *T. fujianensis*

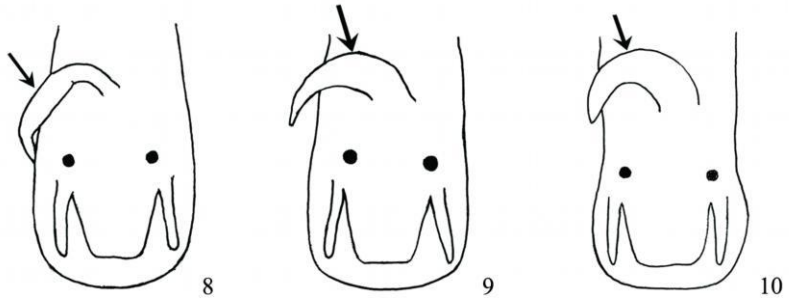


图 8~10 拟钉螺阴茎 (Penis of *Triala*)
8 建瓯拟钉螺, 新种 *T. jianouensis* sp. nov. 9. 华安拟钉螺, 新种 *T. huaanensis* sp. nov. 10 福建拟钉螺 *T. fujianensis*

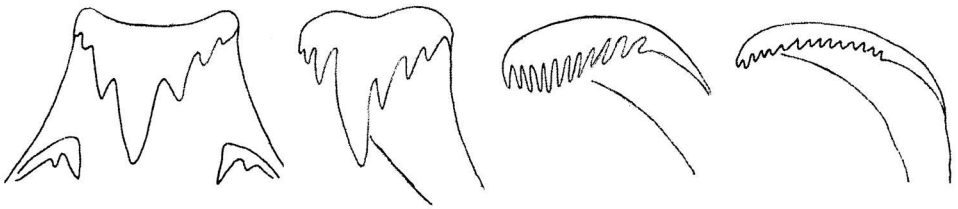


图 11 建欧拟钉螺, 新种 *T. jianouensis* sp. nov, 齿舌 (Radula)
从左至右: 中央齿, 侧齿, 内缘齿, 外缘齿 (left to right showing: central teeth, later teeth, inner marginal teeth, outer marginal teeth)

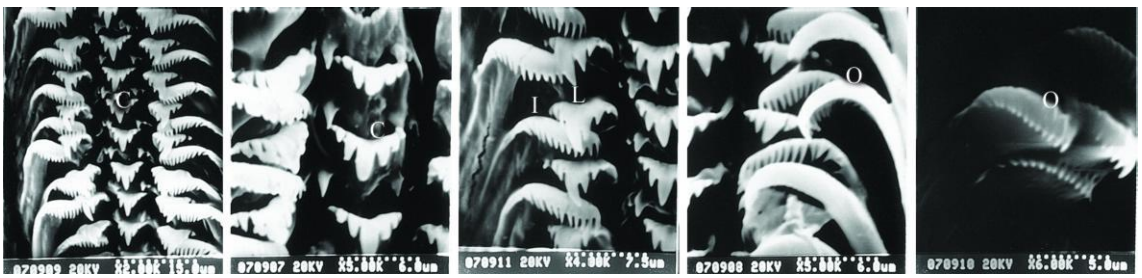


图 12 建欧拟钉螺, 新种 *T. jianouensis* sp. nov, 齿舌 (Radula)
C中央齿, L侧齿, I内缘齿, O外缘齿 (C: central teeth, L: later teeth, I: inner marginal teeth, O: outer marginal teeth)

图 13 华安拟钉螺, 新种 *T. huaanensis* sp. nov., 齿舌 (Radula)
从左至右: 中央齿, 侧齿, 内缘齿, 外缘齿 (left to right showing: central teeth, later teeth, inner marginal teeth, outer marginal teeth)

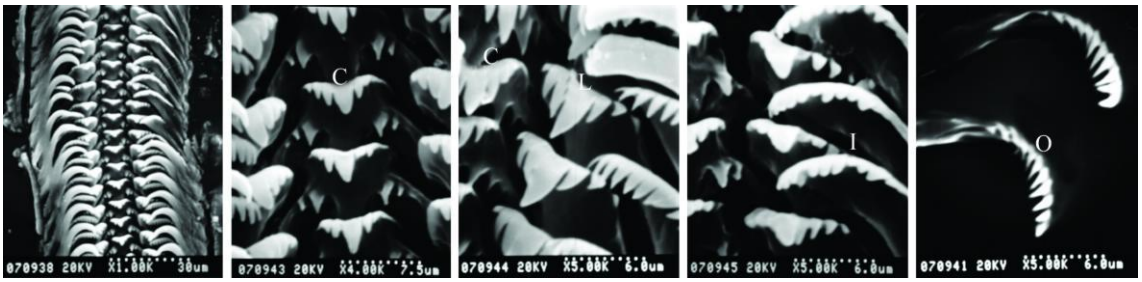


图 14 华安拟钉螺, 新种 *T. huaanensis* sp. nov., 齿舌 (Radula)
C中央齿, L侧齿, I内缘齿, O外缘齿 (C: central teeth, L: later teeth, I: inner marginal teeth, O: outer marginal teeth)

2.2 生境

标本于 2006年 11月 5日采自福建省西南部华安县高安乡邦都村，海拔 227m。高安村位于的丘陵山区，森林茂密。华安拟钉螺栖息地为村后山坳溪坑小沟，水 pH值 6.2，溪床有大小不等的鹅卵石、砂石，小沟被丛密灌木和毛草所郁蔽，小螺多附着于石块、枯枝或烂叶片上。

2.3 螺体肺吸虫尾蚴感染情况

解剖华安拟钉螺 659个，螺体检出斯氏并殖吸虫尾蚴者 1个，感染率为 0.15%。

3 分类讨论

拟钉螺分布于我国的华东、华南、西南、西北及中原地区。上个世纪 70年以来，随着我国学者对并殖吸虫的流行病学进行大量研究，发现不少拟钉螺可作为并殖吸虫的宿主，即凡是有斯氏并殖吸虫 *Paragonimus skrjabini*，异盘并殖吸虫 *P. heterotremas*及丰宫并殖吸虫 *P. proliferus*并殖吸虫病流行区，均有拟钉螺存在，但各地多未有深入自然疫源地采集小螺或拟钉螺标本，未作分类鉴定，实际报告的种类较少。本次报告的建欧拟钉螺、华安拟钉螺两新种与在福建漳平等地（刘月英，1983）发现福建拟钉螺较为相近，但 3者间壳口形态及其齿舌形态学特征等均有差异。建欧拟钉螺、华安拟钉螺与近似种福建拟钉螺的区别见表 1。上述 3种螺雄性生殖器比较见图 5~10。

表 1 建欧拟钉螺、华安拟钉螺与福建拟钉螺形态特征比较

Table 1 Diagnosis features of *T. jianouensis* **sp. nov.,** *T. huaanensis* **sp. nov. and** *T. fujianensis*.

特征	建瓯拟钉螺，新种 *T. jianouensis* sp. nov.	华安拟钉螺，新种 *T. huaanensis* sp. nov.	福建拟钉螺 *T. fujianensis*
壳高/体螺层高（倍数）	2.78	3.12	2.98
壳口	口缘不在同一水平面，上缘呈窄方角形，外缘略向螺体腹面扩张；内唇嵴明显高出，与体螺层间有 1沟状隙	下缘斜向外方扩展；内唇中段低平并紧贴于体螺层；上缘角增厚并呈山峰状隆起，与其相连的壳缘处有 1浅凹沟	卵圆形的壳口在一水平面上；内唇不贴于体螺层，两者间有一线状隙
中央齿	上缘尖齿 5个；基部两侧各具 2枚大小不一的基底齿	上缘尖齿 6~7个；基部两侧各有 1簇梳耙状双生型基底齿	上缘尖齿 7个；基部两侧各有 2枚大小相近的基底齿
侧齿	上缘尖齿 7个	上缘尖齿 6~7个	上缘尖齿 6个
内缘齿	上缘尖齿 11~14个	上缘尖齿 9~10个	上缘尖齿 11~12个
外缘齿	上缘尖齿 14~15个，明显小于华安拟钉螺	上缘尖齿 11~12个	上缘尖齿 27~30个

致谢 标本承蒙中国科学院动物研究所刘月英教授协助鉴定，谨致谢意。

REFERENCES (参考文献)

Benson, W. H. 1843. Description of *Camptoceras*, a new genus of Lymnaeidae, allied to Ancylus, and of tricula, a new type of from allied to melania. *Calcutta J. Nat. Hist*, 3 (12): 465–468.

Heude, R. P. 1890. Notes sur les Mollusques Terrestres de la Vallee du Fleuve Bleu. Memoire concernant L'Historire Naturelle de L'Empire Chinois. 125–180.

Davis, G. M. 1979. The origin evolution of the Gastropod family Pomatiopsidae, with emphasis on the Mekong River Triculinae. *Acadamy of Natural Sciences of Philadelphia, Monograph*, 20: 120–123.

Davis, G. M., Guo, Y-H, Hoagl, K. E. *et al.* 1986. Anatomy and systematics of *Tricula lii* (Prosobranchia: Pomatiopsidae: Triculae), freshwater snails from Yunnan, China, with descriptions of new species. *Proc. Acad. Nat. Sci. Philadel*, 138 (2): 466–575.

Davis, G. M., Liu, Y-Y and Chen, Y-G. 1990. New genus of Triculinae (Prosobranchia: Pomatiopsidae) from China: Phylogenetic Relationspips. *Proc. Acad. Natur. Sci. Philadephia*, 142: 143–165.

Liu, Y-Y and Zhang, W-Z. 1979. On new genus and species of freshwater snails harbouring of lung flukes from China. *Acta Zootaxonomica Sinica*, 4 (2): 132–136. [刘月英，张文珍，1979. 携带肺吸虫尾蚴的淡水螺类一新种二新种记述. 动物分类学报，4 (2): 132~136]

Liu, Y-Y, Zhang, W-Z, Wang, Y-X *et al.* 1983. Studies on *Tricula* (Pposobranchia, Hydrobiidae) from China. *Acta Zootaxonomica Sinica*, 8 (2): 135–140. [刘月英，张文珍，王耀先等，1983. 中国拟钉螺的研究. 动物分类学报，8 (2): 435~140]

Liu, Y-Y, Zhang, W-Z, Wang, Y-X *et al.* 1983. Three new species of Hydrombiidae (Gastropoda, Prosobranchia) from China. *Acta Zootaxonomica Sinica*, 8 (4): 366–369. [刘月英，张文珍，王耀先等，1983. 觿螺科三新种. 动物分类学报，8 (4): 366~369]

Kang, Z-B. 1983. Two new species of *Tricula* Snails harbouring cercariae of *Paragonimus skriabini*. *Journal of Hubei Medial College*, 4 (1): 106–108. [康在彬，1983. 携带斯氏并殖吸虫尾蚴的拟钉螺两新种. 湖北医学院学报，4 (1): 106~108]

Kang, Z-B. 1990. Two new species of *Tricula* Snails (Mesogastropoda, Pomatiopsidae) from China. *Acta Zootaxonomica Sinica*, 15 (3): 271–275. [康在彬，1990. 中国拟钉属二新种（腹足纲，盖口螺科）. 动物分类学报，15 (3): 271~275]

Liu, Y-Y, Zhang, W-Z and Wang, Y-X. 1993. Medical Malacology. China Ocean Press, Beijing. 24–75. [刘月英，张文珍，王耀先，1993. 医学贝类学. 北京：海洋出版社]

Davis, G. M., Chen, C-E and Kang, Z-B. 1994. Snail hosts of Paragonmus in Asia and America. *Chiiese Journal of Parasitology and Parqsitolary*, 12 (4): 279–284. [Davis, G. M., 陈翠娥，康在彬等，1994. 亚洲和美洲的并殖吸虫的螺类宿主. 中国寄生虫学与寄生虫病学杂志，12 (4): 279~284]

TWO NEW SPECIES OF TRICULA (MESOGASTROPODA, POMATIOPSIDAE) FROM CHINA

CHENG You-Zhu[1], WU Xiao-Ping[2*], LI Li-Sha[1]
1. *Fujian Municipal Center for Disease Control and Prevention, Fuzhou 350001, China*
2. *College of Life Sciences, Nanchang University, Nanchang 330031, China*

Abstract This two new freshwater snails which were collected from Jianou City, Qilikeng Village (27°04′N, 118°21′E; alt. 203 m), Nov. 2006, and Huaan County, Bangdu Village (25°02′N, 117°31′E; alt. 227 m), Mar. 2007, Fujian Province, China and among the collections, two new species of *Triula* (Mesogastropoda, Pomatiopsidae) were identified. Based on morphology of the shell and radula, two new species *T. jianouensis* sp. nov. and *T. huaanensis* sp. nov. were described, and the diagnosis features of two new species and the similar species *T. fujianensis* was also given. All the type specimens are deposited in Fujian Municipal Center for Disease Control and Prevention. Unit: mm.

Tricula jianouensis **sp. nov.** (Fig. 1)

Holotype: shell length 3.11, shell breadth 1.53, body whorl height 1.10, aperture 1.25 × 0.90. Paratypes: 20, shell length 2.88–3.13, shell breadth 1.38–1.60, body whorl heigh 1.00–1.13, aperture 1.20–1.28×0.80–0.93.

Shells are minute, thick, opaque, size ranging in height from 1.54–1.64. They are broad conic-shaped with 5 whorls. Whorls increase rapidly in height with a ladder-liked, penultimate whorl and apical whorl often absent. Shell height is 2.78 times of body whorl, apex obtuse, shell surface smooth with light green-yellow color. Body whorl is a little expended and weak growth lines on shell surface. Suture shallow. Columellar fold and outer lip form a narrow angle, outer lip of aperture shovel liked, pronounced varix on inner lip, and forms a gouge-liked gap. Operculum is elongate ellips, corneous thin and transparent, with unconspicuous spiral line.

The penis is curved finger-shaped, lie on the dorsa of neck. Radula has seven rows teeth. The most commonly encountered cusp formula is 2-1-2/2-2• 3-1-3• 11 (14) • 14 (15). Central teeth have 5 cusps and two pieces of basocones on each side of the base, and the middle cusps obviously longer. Later teeth have 7 cusps. The inner marginal teeth average 11–14 cusps, while outer marginal teeth clearly have fewer, an average of 14–15.

Locality and habitat: Type locality of the new species is in Qiliken Village, Xiaoqiao Town, Jianou City, Fujian Province (26°08′N, 117°40′E). Snails were collected from a small ditch with slow water flowing and rock, dead wood on the bottom. Snails attach on the rock, dead wood and leaves.

Eymology: This new species is named after its type locality.

Tricula huaanensis **sp. nov.** (Figs. 2–3)

Holotype: shell length 2.5, shell breadth 1.15, body whorl height 0.83, aperture 1.13 × 0.80. Paratype: 20, shell length 2.41–2.58, shell breadth 1.05–1.18, body whorl heigh 0.78–0.85, aperture 1.08–1.15×0.73–0.80.

Shells are minute, thin, slightly transparence, size ranging in shell height from 2.41–2.50. Shells are broad conic-shaped with 5 whorls, and whorls increase rapidly in height with a ladder-liked. Shell height is 3.12 times of body whorl, apex obtuse. Shell surface smooth with light green color. Body whorl expended and with weak growth lines on shell surface, suture shallow, both outer lip and inner lip are expand to be bugle-liked. Outer lip with dark-brown color marge, outer lip and inner lip are expand to be bugle-liked, the middle part of inner lip evaginates and clings on body whorl, up edge incrassation and promontory, and form a shallow gap at the conjoint with outer lip, umbilicus cranny liked. Operculum is elongate ovate-round, corneous, thin and transparent, with unconspicuous spiral line.

The penis is curved finger-shaped, lie on the dorsa of neck. Radula has seven rows teeth. The most commonly encountered cusp formula is 3 (2) -1-2/3 (2) -2• 3 (2) -1-2• 9-10• 11-12. Central teeth have 6–7 cusps and two pieces gemination harrow-liked basocones on each side of the base, and the middle cusps obviously longer. Later teeth have 6–7 cusps. The inner marginal teeth average 9–10 cusps, while outer marginal teeth clearly have fewer, an average of 11–12.

Locality and habitat: Type locality of the new species is in Gaoan Town, Huaan County, Fujian Province (25°02′N, 117°31′E). Snails were collected from a small ditch with rock, dead wood on the bottom. Snails attach on the rock, dead wood and leaves.

The diagnosis features of new species and similar species was given in Table 1.

Eymology: This new species is named after its type locality.

Key words Mesogastropoda, Pomatiopsidae, *Triula*, new species

* Corresponding author, E-mail: xpwu@ncu.edu.cn